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STIC Database Tracking Number: 121686

TO: Rosanne Kosson
Location: REM-3B84&3E71
Art Unit: 1651
Tuesday, May 11, 2004

Case Serial Number: 10/701845

From: Mary Jane Ruhl
Location: Biotech-Chem Library
Remsen 1-B55
Phone: 571-272-2524

maryjane.ruhl@uspto.gov

Search Notes

Examiner Kosson,

Here are the results for your recent search request.

Please feel free to contact me if you have any questions about these results.

Thank you for using STIC services. We appreciate the opportunity to serve you.

Sincerely,

Mary Jane Ruhl
Technical Information Specialist
STIC
CM-1, Rm. 6-A-06
605-1155

121686

Access DB# _____

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Rosanne Kosson Examiner #: 80342 Date: 5/7/04

Art Unit: 1651 Phone Number 30 22923 Serial Number: 10/701,845

Mail Box and Bldg/Room Location: Remsen 3B84 Results Format Preferred (circle): (PAPER) DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Composition for inoculating legumes and method therefor

Inventors (please provide full names): Juan Bautista Mario Lucio MAGRI

Earliest Priority Filing Date: Nov. 8, 2002

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please see ~~new~~ attached page.

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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher:	NA Sequence (#)	STN
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed:	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time	Other	Other (specify)

PTO-1590 (8-01)

Please search:

a composition (for growing leguminous plants) containing:

1) Rhizobium Japonicum bacteria, maltose, potassium sorbate

2) the above and peat

3) the above and lactose.

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=> d his ful

     FILE 'HCAPLUS' ENTERED AT 18:31:56 ON 11 MAY 2004
                  E MAGRI JUAN BAUTISTA/AU
L1                1 SEA ABB=ON  "MAGRI J"/AU
                  E LUCIO JUAN/AU
L2                1 SEA ABB=ON  "LUCIO L"/AU
                  E MARIO JUAN BAUTISTA/AU
                  E BAUTISTA JUAN/AU
L3               76 SEA ABB=ON  ("BAUTISTA JOSE LUIS RODRIGUEZ"/AU OR "BAUTISTA
                  JOSE M"/AU OR "BAUTISTA JUAN"/AU)
L4               78 SEA ABB=ON  L1 OR L2 OR L3
L5                0 SEA ABB=ON  L4 AND ?LEGUME?

     FILE 'REGISTRY' ENTERED AT 18:34:44 ON 11 MAY 2004
                  E RHIZOBIUM JAPONICUM BACTERIA/CN
L6                1 SEA ABB=ON  "RHIZOBIUM JAPONICUM"/CN
L7                2 SEA ABB=ON  MALTOSE/CN
L8                1 SEA ABB=ON  POTASSIUM SORBATE/CN
L9                1 SEA ABB=ON  LACTOSE/CN
L10           29430 SEA ABB=ON  ?RHIZOBIUM?(W)?JAPONICUM?(3A)?BACTER? OR L6 OR L7
                  OR L8 OR ?MALTOSE? OR (?POTASSIUM? OR K)(W)?SORBATE?
L11               0 SEA ABB=ON  (?RHIZOBIUM?(W)?JAPONICUM?(3A)?BACTER? OR L6) AND
                  (?MALTOSE? AND L7) AND ((?POTASSIUM? OR K)(W)?SORBATE? OR L8)
L12               0 SEA ABB=ON  (?RHIZOBIUM?(W)?JAPONICUM? OR L6) AND (?MALTOSE?
                  AND L7) AND ((?POTASSIUM? OR K)(W)?SORBATE? OR L8)
L13               5 SEA ABB=ON  (?RHIZOBIUM?(W)?JAPONICUM? OR L6) AND (?MALTOSE?
                  AND L7)
L14               0 SEA ABB=ON  (?RHIZOBIUM?(W)?JAPONICUM? OR L6) AND ((?POTASSIUM?
                   OR K)(W)?SORBATE? OR L8)
L15             163 SEA ABB=ON  L10 AND ?LEGUM?
L16             115 SEA ABB=ON  L15 AND (?MALTOSE? OR L7)
L17               3 SEA ABB=ON  L15 AND (?POTASSIUM? OR K)(W)?SORBATE?
L18             118 SEA ABB=ON  L16 OR L17
L19              57 SEA ABB=ON  L18 AND (?PLANT? OR ?SEED?)
L20              26 SEA ABB=ON  L19 AND (?GROW? OR ?INCREAS? OR ?THRIVE? OR
                  ?DEVELOP?)
L21               3 SEA ABB=ON  L20 AND ?PEAT?
L22              14 SEA ABB=ON  L20 AND (?LACTOSE? OR L9)
L23              26 SEA ABB=ON  L20 OR L21 OR L22
L24               4 SEA ABB=ON  L23 AND ?COMPOSITION?
L25              26 SEA ABB=ON  L23 OR L24

     FILE 'AGRICOLA, BIOSIS, CABA, CROPB, CROPU, ESBIOBASE' ENTERED AT
     19:07:21 ON 11 MAY 2004
L26             209 SEA ABB=ON  L25
L29               0 SEA ABB=ON  (?RHIZOBIUM?(W) ?JAPONICUM? OR L6) AND (?MALTOSE?
                  AND L7) AND ((?POTASSIUM? OR K)(W) ?SORBATE? OR L8)
L30             176 DUP REMOV L26 (33 DUPLICATES REMOVED)
L31               1 SEA ABB=ON  L30 AND RHIZOBIUM?(W) JAPONICUM?
L32              14 SEA ABB=ON  L30 AND PLANT?(3A) GROWTH?
L33              12 SEA ABB=ON  L30 AND RHIZOBIUM?
L34               2 SEA ABB=ON  L33 AND PLANT?(3A) GROWTH?
L35              12 SEA ABB=ON  L33 OR L34
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— no applicant citations found

CA Plus entered →

26 cits from CA Plus

12 cits from other databases

see p.17 to start — hits 2, 4, 8, 9

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=> d que stat l25
L6             1 SEA FILE=REGISTRY ABB=ON  "RHIZOBIUM JAPONICUM"/CN
L7             2 SEA FILE=REGISTRY ABB=ON  MALTOSE/CN
L8             1 SEA FILE=REGISTRY ABB=ON  POTASSIUM SORBATE/CN
L9             1 SEA FILE=REGISTRY ABB=ON  LACTOSE/CN
L10        29430 SEA FILE=HCAPLUS ABB=ON  ?RHIZOBIUM?(W)?JAPONICUM?(3A)?BACTER?
                 OR L6 OR L7 OR L8 OR ?MALTOSE? OR (?POTASSIUM? OR K)(W)?SORBATE
                 ?
L15          163 SEA FILE=HCAPLUS ABB=ON  L10 AND ?LEGUM?
L16          115 SEA FILE=HCAPLUS ABB=ON  L15 AND (?MALTOSE? OR L7)
L17            3 SEA FILE=HCAPLUS ABB=ON  L15 AND (?POTASSIUM? OR K)(W)?SORBATE?

L18          118 SEA FILE=HCAPLUS ABB=ON  L16 OR L17
L19           57 SEA FILE=HCAPLUS ABB=ON  L18 AND (?PLANT? OR ?SEED?)
L20           26 SEA FILE=HCAPLUS ABB=ON  L19 AND (?GROW? OR ?INCREAS? OR
                 ?THRIVE? OR ?DEVELOP?)
L21            3 SEA FILE=HCAPLUS ABB=ON  L20 AND ?PEAT?
L22           14 SEA FILE=HCAPLUS ABB=ON  L20 AND (?LACTOSE? OR L9)
L23           26 SEA FILE=HCAPLUS ABB=ON  L20 OR L21 OR L22
L24            4 SEA FILE=HCAPLUS ABB=ON  L23 AND ?COMPOSITION?
L25           26 SEA FILE=HCAPLUS ABB=ON  L23 OR L24

=> d ibib abs l25 1-26

L25  ANSWER 1 OF 26  HCAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2001:694848  HCAPLUS
DOCUMENT NUMBER:          136:2951
TITLE:                    Srchi24, a chitinase homolog lacking an essential
                          glutamic acid residue for hydrolytic activity, is
                          induced during nodule development on
                          Sesbania rostrata
AUTHOR(S):                Goormachtig, Sofie; Van de Velde, Willem; Lievens,
                          Sam; Verplancke, Christa; Herman, Sylvia; De Keyser,
                          Annick; Holsters, Marcelle
CORPORATE SOURCE:         Vakgroep Moleculaire Genetica, Departement
                          Plantengenetica, Vlaams Interuniversitair Instituut
                          voor Biotechnologie, Universiteit Gent, Ghent, B-9000,
                          Belg.
SOURCE:                   Plant Physiology (2001), 127(1), 78-89
                          CODEN: PLPHAY; ISSN: 0032-0889
PUBLISHER:                American Society of Plant Biologists
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
AB   The interaction between the tropical legume Sesbania rostrata
     and the bacterium Azorhizobium caulinodans results in the formation of
     nodules on both stem and roots.  Stem nodulation was used as a model
     system to isolate early markers by differential display.  One of them,
     Srchi24 is a novel early nodulin whose transcript level increased
     already 4 h after inoculation.  This enhancement depended on Nod
     factor-producing bacteria.  Srchi24 transcript levels were induced also by
     exogenous cytokinins.  In situ hybridization and immunolocalization expts.
     showed that Srchi24 transcripts and proteins were present in the outermost
     cortical cell layers of the developing nodules.  Sequence
     analyses revealed that Srchi24 is similar to class III chitinases, but
     lacks an important catalytic glutamate residue.  A fusion between a
     maltose-binding protein and Srchi24 had no detectable hydrolytic
     activity.  A function in nodulation is proposed for the Srchi24 protein.
REFERENCE COUNT:          62    THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
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L25 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:588196 HCAPLUS
DOCUMENT NUMBER: 135:302939
TITLE: Optimization of α-galactosidase production in Streptomyces erythrus
AUTHOR(S): Elshafei, Ali M.; Foda, Mohamed S.; Abdel-Mobde, Emam; Ali, Nadia H.
CORPORATE SOURCE: Dept. of Microbial Chemistry, National Research Centre, Cairo, Egypt
SOURCE: Acta Microbiologica Polonica (2001), 50(1), 53-63
CODEN: AMPOAX; ISSN: 0137-1320
PUBLISHER: Polskie Towarzystwo Mikrobiologow
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Physiol. studies on Streptomyces erythrus NRRL ISP 5517 **grown** on fourteen different media have revealed that the enzyme was formed and released in the medium with different levels depending upon the type of the medium and the carbon source used. The results indicate that S. erythrus produced the highest level of extracellular and endocellular enzyme when **grown** in modified Czapek-Dox's medium (containing 2% D-**galactose** as the only carbon source). The highest levels of enzyme formation was obtained upon using D-**galactose** (9.94 Units/mL and 2.92 Units/mL), raffinose (8.87 Units/mL and 2.69 Units/mL) or melibiose (8.14 Units/mL and 2.52 Units/mL) at a final concentration of 2% as inducers for extra- and endocellular enzyme, resp. With respect to nitrogen sources tested, sodium nitrate produced the highest level of α-galactosidase in both fractions optimally at 2.0 g/L. Studies revealed that the extracellular enzyme levels were produced optimally at initial pH in culture of 7.0 and air:medium ratio in flasks corresponding to 1:5 and after 5 days of incubation at 30°C. On testing the effect of the addition of eight **leguminous seeds** powders (at a final concentration of 2%), it was found that soybean powder gave the highest induction effect. The addition of sodium nitrate at a concentration of 2 g/l to Dox's soybean medium, the adjustment of initial pH value of the medium to 7.0 and the air: medium ratio in flasks to 1:5 for an incubation period of 4 days produced the highest level of extracellular α-galactosidase.
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:492968 HCAPLUS
DOCUMENT NUMBER: 131:239551
TITLE: Production and characterization of raffinose-hydrolysing and invertase activities of Aspergillus fumigatus
AUTHOR(S): De Rezende, S. T.; Felix, C. R.
CORPORATE SOURCE: Departamento de Bioquimica e Biologia Molecular, Universidade Federal de Vicosa, Vicosa, 36.571-000, Brazil
SOURCE: Folia Microbiologica (Prague) (1999), 44(2), 191-195
CODEN: FOMIAZ; ISSN: 0015-5632
PUBLISHER: Institute of Microbiology, Academy of Sciences of the Czech Republic
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Raffinose-type **galactose** oligosaccharides constitute a

substantial part (40%) of the soluble sugars present in soybean **seeds** and are responsible for flatulence following ingestion of soybean and other **legumes**. Enzymic hydrolysis of these oligosaccharides would improve the nutritional value of soybean milk. Aspergillus fumigatus produces substantial raffinose-hydrolyzing and invertase activities when **grown** on wheat straw. Three proteins displaying maximal activity at pH 4.5-5.5 and 55-60°C and having molar mass of 66.8, 50.3 and 30.2 kDa were purified. Raffinose and sucrose were hydrolyzed with equivalent affinities by each protein. Nevertheless, the Km and Vlim values determined for hydrolysis of sucrose by the 66.8 kDa enzyme differed from those determined with the 50.3 kDa protein. Glucose was produced when sucrose was the substrate. The three proteins also hydrolyzed stachyose but not melibiose, **maltose**, inulin or 4-nitrophenyl α-D-galactopyranoside. A. fumigatus enzymes may be candidates for processing of soybean milk to reduce its flatulence potential.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:453783 HCAPLUS
DOCUMENT NUMBER: 131:209859
TITLE: A novel Sinorhizobium meliloti operon encodes an α-glucosidase and a periplasmic-binding-protein-dependent transport system for α-glucosides
AUTHOR(S): Willis, Laura B.; Walker, Graham C.
CORPORATE SOURCE: Department of Biology, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA
SOURCE: Journal of Bacteriology (1999), 181(14), 4176-4184
CODEN: JOBAAY; ISSN: 0021-9193
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The most abundant carbon source transported into **legume** root nodules is photosynthetically produced sucrose, yet the importance of its metabolism by rhizobia in **planta** is not yet known. To identify genes involved in sucrose uptake and hydrolysis, the authors screened a Sinorhizobium meliloti genomic library and discovered a segment of S. meliloti DNA which allows Ralstonia eutropha to **grow** on the α-glucosides sucrose, **maltose**, and trehalose. Tn5 mutagenesis localized the required genes to a 6.8-kb region containing five open reading frames which were named agl, for α-glucoside utilization. Four of these (aglE, aglF, aglG, and aglK) appear to encode a periplasmic-binding-protein-dependent sugar transport system, and one (aglA) appears to encode an α-glucosidase with homol. to family 13 of glycosyl hydrolases. Cosmid-borne agl genes permit uptake of radio-labeled sucrose into R. eutropha cells. Anal. of the properties of agl mutants suggests that S. meliloti possesses at least one addnl. α-glucosidase as well as a lower-affinity transport system for α-glucosides. It is possible that the Fix+ phenotype of agl mutants on alfalfa is due to these addnl. functions. Loci found by DNA sequencing to be adjacent to aglEFGAK include a probable regulatory gene (aglR), zwf and edd, which encode the first two enzymes of the Entner-Doudoroff pathway, pgl, which shows homol. to a gene encoding a putative phosphogluconolactonase, and a novel Rhizobium-specific **repeat** element.

REFERENCE COUNT: 71 THERE ARE 71 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:433576 HCAPLUS

DOCUMENT NUMBER: 131:225861
TITLE: Isolation and characterization of proteolytic ruminal bacteria from sheep and goats fed the tannin-containing shrub **legume** Calliandra calothyrsus
AUTHOR(S): McSweeney, Christopher S.; Palmer, Brian; Bunch, Rowan; Krause, Denis O.
CORPORATE SOURCE: Long Pocket Laboratories, CSIRO Tropical Agriculture, Indooroopilly, 4068, Australia
SOURCE: Applied and Environmental Microbiology (1999), 65(7), 3075-3083
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Tannins in forages complex with protein and reduce the availability of nitrogen to ruminants. Ruminal bacteria that ferment protein or peptides in the presence of tannins may benefit digestion of these diets. Bacteria from the rumina of sheep and goats fed Calliandra calothyrsus (3.6% N and 6% condensed tannin) were isolated on proteinaceous agar medium overlaid with either condensed (calliandra tannin) or hydrolyzable (tannic acid) tannin. Fifteen genotypes were identified, based on 16S ribosomal DNA-restriction fragment length polymorphism anal., and all were proteolytic and fermented peptides to ammonia. Ten of the isolates grew to high optical d. (OD) on carbohydrates (glucose, cellobiose, xylose, xylan, starch, and **maltose**), while the other isolates did not utilize or had low **growth** on these substrates. In pure culture, representative isolates were unable to ferment protein that was present in calliandra or had been complexed with tannin. One isolate, Lp1284, had high protease activity (80 U), a high specific **growth** rate (0.28), and a high rate of ammonia production (734 nmol/min/mL/OD unit) on Casamino Acids and Trypticase Peptone. Phylogenetic anal. of the 16S ribosomal DNA sequence showed that Lp1284 was related (97.6%) to Clostridium botulinum NCTC 7273. Purified **plant** protein and casein also supported **growth** of Lp1284 and were fermented to ammonia. This is the first report of a proteolytic, ammonia-hyperproducing bacterium from the rumen. In conclusion, a diverse group of proteolytic and peptidolytic bacteria were present in the rumen, but the isolates could not digest protein that was complexed with condensed tannin.

REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:42592 HCAPLUS
DOCUMENT NUMBER: 128:99662
TITLE: **Growth** behavior and IAA production by a Rhizobium sp. isolated from root nodules of a **leguminous** medicinal herb, Dolichos biflorus, in culture
AUTHOR(S): Datta, Chhaya; Basu, P. S.
CORPORATE SOURCE: Department Botany, University Burdwan, Burdwan, 713104, India
SOURCE: Microbiological Research (1997), 152(4), 353-357
CODEN: MCRSEJ; ISSN: 0944-5013
PUBLISHER: Gustav Fischer Verlag
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A Rhizobium species isolated from the root nodules of Dolichos biflorus produced large amts. of indole acetic acid (IAA) (139.1 μg/mL) from

L-Trp supplemented basal medium. The Rhizobium was a fast **growing** species which reached its stationary phase of **growth** and IAA production at 24 h. An enrichment of the C-free incubation medium with sucrose (1%), cytokinin (20 μg/mL), and KNO,3 (0.2%) promoted the IAA production by 424.38% over control. The possible role of the rhizobial production of IAA on the rhizobia-**legume** symbiosis is discussed.

L25 ANSWER 7 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:586865 HCAPLUS
DOCUMENT NUMBER: 125:327387
TITLE: A novel report on non-**legume** nodule system in Biophytum sensitivum
AUTHOR(S): Paul, Shoma; Bhowmik, G.; Baruah, P.; Roy, M. K.
CORPORATE SOURCE: Regional Research Laboratory, Department Biochemistry, Jorhat, 785 006, India
SOURCE: Journal of the Assam Science Society (1995), 37(3), 185-187
CODEN: JASYBQ; ISSN: 0587-1921
PUBLISHER: Assam Science Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A bacteria in the nodules of B. sensitivum was studied. Screening and different tests indicated that the bacteria belonging to the genus Rhizobium. The bacterium was found to utilize fructose, arabinose, mannitol, xylose, glucose, sucrose, **lactose**, **galactose**, **maltose**, monosodium glutamate, and sodium citrate, it produces exopolysaccharides. It was also found to be acid producer and fast **growers**. The strain could not be identified to the species level, yet it may be placed in one of these species - R. **leguminosarum**, R. meliloti or R. trifolii based on its characteristics and is a novel addition in report of Rhizobium strain in a non-**leguminous** **plant**.

L25 ANSWER 8 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:297068 HCAPLUS
DOCUMENT NUMBER: 120:297068
TITLE: Characteristics of sugars in green **legume** **seeds**
AUTHOR(S): Jacorzynski, Bohdan; Osucha, Andrzej
CORPORATE SOURCE: Cent. Agrotechnol. Vet. Sci., Pol. Acad. Sci., Olsztyn, 02-903, Pol.
SOURCE: Polish Journal of Food and Nutrition Sciences (1993), 2(1), 93-103
CODEN: PJFSE7; ISSN: 1230-0322
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Green (immature) pea and bean varieties designated for canning contained 40% total and 15-25% soluble sugars. In canned green peas and canned green beans, the losses of total sugars were 4-17 and 4-13% and losses of soluble sugars were 42-57 and 36-54%, resp. During maturation of green peas, an **increase** of dry matter accompanied by a decrease of soluble sugars was observed This tendency was linear and significant (for samples containing 21-31% dry matter). The rate of loss of soluble sugars and parallel **growth** of starch in green peas depended on the variety; the fastest changes were observed in early ripening varieties. Of soluble sugars, sucrose dominated (>90%) in green peas, whereas in green beans sucrose, glucose, and fructose were present in considerable amts. The amount of galactosugars, raffinose and stachyose, in green peas did not exceed 1% of dry matter, whereas in green beans galactosugars were absent or appeared

only in traces. Thus, green (immature) **legumes** do not cause any flatulence problem after their consumption by humans.

L25 ANSWER 9 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1987:173004 HCAPLUS
DOCUMENT NUMBER: 106:173004
TITLE: Chemotaxis of salt-tolerant and sensitive Rhizobium strains to root exudates of lentil (Lens culinaris L.) genotypes and symbiotic nitrogen-fixation, proline content and grain yield in saline calcareous soil
AUTHOR(S): Rai, R.
CORPORATE SOURCE: Rajendra Agric. Univ. Bihar, Dholi, 843121, India
SOURCE: Journal of Agricultural Science (1987), 108(1), 25-37
CODEN: JASIAB; ISSN: 0021-8596
DOCUMENT TYPE: Journal
LANGUAGE: English
AB R. **leguminosarum** Strains and lentil genotypes were screened for their salt tolerance. Salt-tolerant strains were more antibiotic-resistant and showed higher relative rates of oxidation of carbohydrates and tricarboxylic acid intermediates. The content and concns. of root exudates of lentil genotypes were different and found to be attractants for the Rhizobium strains. Under salt stress, significant interactions between salt-tolerant strains and genotypes resulted in different responses of nodulation and host **plant growth** measurements. Proline concns. of **plants** showed considerable variations among genotype and strain combinations.

L25 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1987:3896 HCAPLUS
DOCUMENT NUMBER: 106:3896
TITLE: Evaluation of a reversed phase high performance liquid chromatographic column for estimation of **legume seed** oligosaccharides
AUTHOR(S): Wight, A. W.; Datel, J. M.
CORPORATE SOURCE: Natl. Food Res. Inst., Pretoria, 0001, S. Afr.
SOURCE: Food Chemistry (1986), 21(3), 167-81
CODEN: FOCHDJ; ISSN: 0308-8146
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The retention characteristics of the major **legume seed** oligosaccharides (sucrose [57-50-1], raffinose [512-69-6], stachyose [470-55-3], and verbascose [546-62-3]), and also those of some minor oligosaccharide components of soybeans, lupine **seeds**, and fermented soybean products, were studied with a LiChrosorb RP-18 [66369-14-0] reversed-phase column. Excellent separation of sucrose, raffinose, and stachyose from one another and from minor oligosaccharide components was achieved with water as the mobile phase, but verbascose coeluted with raffinose. Addition of salts to the mobile phase **increased** retention and improved selectivity of separation Rapid and reasonably efficient separation of sucrose, raffinose, stachyose, and verbascose was achieved when 0.3M (NH4)2SO4 was used as the mobile phase. These oligosaccharides were clearly resolved from minor oligosaccharide components. The detection limits were 90 ng for sucrose and 105 ng for stachyose and raffinose. The relative standard deviations for determination of these 3 oligosaccharides in tempeh were 1.00-2.09%. A comparison of the retention characteristics of the reversed-phase column with those of a plain silica column continuously modified with an MeCN-H2O-amine modifier mixture as mobile phase revealed major differences in selectivity which may be of value for separation and identification purposes.

L25 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1983:520543 HCAPLUS
DOCUMENT NUMBER: 99:120543
TITLE: Purification and characterization of lectins from Vicia hirsuta
AUTHOR(S): Solheim, Bjorn
CORPORATE SOURCE: Inst. Biol. Geol., Univ. Tromso, Tromso, N-9001, Norway
SOURCE: Physiologia Plantarum (1983), 58(4), 515-22
CODEN: PHPLAI; ISSN: 0031-9317
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The presence of 3 lectins in the **seeds** of V. hirsuta was shown. The main lectin was purified to homogeneity by buffer extraction, (NH4)2SO4 precipitation, affinity chromatog. on Sephadex G-100, and isoelec. focusing in granulated gel. By using chromatofocusing instead of isoelec. focusing, the yield was **increased** 5-fold. The lectin has a pI of 6.4. It is composed of large β-subunits with a mol. weight of 19,200 and small α-subunits (mol. weight 12,800) in a 1:1 ratio. The subunits were separated on Sephadex G-75 when equilibrated with 6M guanidine-HCl. The amino acid compns. of the 2 different subunits were determined No S-containing amino acids are present. The lectin resembles the lectins of **legumes** from the same cross-inoculation group, i.e. Lens culinaris, L. esculenta, Pisum sativum, and several Vicia subspecies, by the same type of sugar specificity and amino acid **composition**

L25 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1983:157849 HCAPLUS
DOCUMENT NUMBER: 98:157849
TITLE: The free sugars and cyanogenic glycoside in the **seed** of Vicia angustifolia var. segetalis. I. Free sugars and their changes by incubation of homogenate of the **seeds**
AUTHOR(S): Kasai, Tadasi; Fujita, Osamu; Kawamura, Sin'itiro
CORPORATE SOURCE: Fac. Agric., Kagawa Univ., Mikicho, 761-07, Japan
SOURCE: Kagawa Daigaku Nogakubu Gakujutsu Hokoku (1981), Volume Date 1980-1981, 32(2), 103-9
CODEN: KDNGAC; ISSN: 0368-5128
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB The **seed** of Vicia angustifolia var segetalis contained only 0.066% reducing sugar and 6.26% total sugar on a dry basis, when determined after extraction with 80% EtOH and water. These sugar contents were similar to other **legume seeds**. However, sucrose and α-galactosylsaccharides were absent. The main free sugars were tetra- and pentasaccharides, and the latter was presumed to consist of **galactose** and glucose residues in a molar ratio of 4:1. Incubation of the **seed** homogenate caused a decrease in higher oligosaccharides and marked **increase** in **galactose** and lesser **increases** in other monosaccharides (glucose, arabinose, and xylose). When the incubation time was short, there appeared a disaccharide, probably vicianose or 6-(β-L-arabinosyl)-D-glucose. The crude enzyme solution catalyzed the degradation of **maltose**, melibiose, **lactose**, raffinose, and stachyose, but did not catalyze that of sucrose. The sugars were identified by paper, thin-layer, and gas chromatog.

L25 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1978:189106 HCAPLUS

DOCUMENT NUMBER: 88:189106
TITLE: Effect of different kinds of sugars on nodule formation in **leguminous plants** as examined by excised root culture technique
AUTHOR(S): Yoshida, Shigekata; Yatazawa, Michihiko
CORPORATE SOURCE: Fac. Agric., Univ. Nagoya, Nagoya, Japan
SOURCE: Soil Science and Plant Nutrition (Tokyo, Japan) (1978), 24(1), 131-4
CODEN: SSPNAW; ISSN: 0038-0768
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Excised mung bean roots **increased** in **growth** as the sucrose [57-50-1] concentration **increased** 0-5%; root **growth** was depressed by higher concns. of 10 and 20% sucrose. Maximum nodule formation was at 10% sucrose. Glucose [50-99-7] and fructose [57-48-7] concns. up to 10% also **increased** nodule formation, but much less markedly than sucrose. When 5% sucrose was supplemented with 1% glucose or fructose nodule formation **increased**. Supplementation with 1% arabinose [147-81-9] inhibited nodule formation completely. **Lactose** [**63-42-3**], **galactose** [59-23-4], and xylose [58-86-6] depressed nodulation when added to sucrose; **maltose** [**69-79-4**] had no effect.

L25 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1970:52033 HCAPLUS
DOCUMENT NUMBER: 72:52033
TITLE: Respiration of efficient and inefficient strains of Rhizobium
AUTHOR(S): Magu, S. P.; Sen, A. N.
CORPORATE SOURCE: Indian Agr. Res. Inst., New Delhi, India
SOURCE: Archiv fuer Mikrobiologie (1969), 68(4), 355-61
CODEN: ARMKA7; ISSN: 0003-9276
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The respiratory activity of efficient and inefficient strains of Rhizobium was compared. Rate of respiration of both types of strains R. trifolii and R. **leguminosarum** had no relation to efficiency when tested on glucose, **maltose**, or mannitol as substrate. Efficient strains of both species showed greater simulation in their respiration rate by the addition of glycine to the glucose substrate than was shown by the inefficient strains. In pot cultures with sterile soil, berseem(Trifolium alexandrinum) was inoculated with 15 strains of R. trifolii. Six were highly efficient (**increasing** the N content by more than 70% over uninoculated controls); the other strains were moderately efficient (30-50% **increase** in N) or inefficient (4-20% **increase** in N). Pea (Pisum sativum) was inoculated with 10 strains of R. **leguminosarum**. Five strains were highly efficient, 1 moderately efficient and 4 were more or less inefficient.

L25 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1968:66373 HCAPLUS
DOCUMENT NUMBER: 68:66373
TITLE: Quantitative distribution of free sugars in organs of various cereals and **legumes** during germination. Free sugars in the **seeds**, leaf buds, and roots of cereals and **legumes**
AUTHOR(S): Matsushita, Ayako
CORPORATE SOURCE: Kumamoto Women's Univ., Kumamoto, Japan
SOURCE: Nippon Nogei Kagaku Kaishi (1967), 41(12), 646-53
CODEN: NNKKAA; ISSN: 0002-1407

DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB The free sugars were studied in soybean, azuki bean (Phaseolus angularis), Egyptian kidney bean (Dolichos lablab), buckwheat, wheat, barley, millet, and glutinous and nonglutinous rice before and after germination. In the endosperm of cereals before germination, sucrose (I) was the main component; however, in wheat and buckwheat, glucose (II) was found at a level similar to that of I. Stachyose (III), **maltose** (IV), and raffinose (V) were minor components. I decreased to 50-80% of the original level and II **increased** markedly during 4-6 days of germination. I and II were the main components in shoots and roots of germinated cereals, and a small amount of IV was also found. The total of I and II was >80% of the free sugars in bean cotyledons before germination, and in addition to II, IV, and V, a trace of a fraction assumed to be verbascose was found. In germinated beans, I and II **increased** and III almost disappeared in the cotyledon, and II was the main component in the shoot and root.

L25 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1965:441084 HCAPLUS
DOCUMENT NUMBER: 63:41084
ORIGINAL REFERENCE NO.: 63:7414c-e
TITLE: Lipid metabolism of puppies as affected by kind and amount of fat and of dietary carbohydrate
AUTHOR(S): Wiese, Hilda F.; Bennett, Mildred J.; Coon, Edmund; Yamanaka, William
CORPORATE SOURCE: Children's Hosp. of the East Bay, Oakland, CA
SOURCE: Journal of Nutrition (1965), 86(3), 271-80
CODEN: JONUAI; ISSN: 0022-3166
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Feeding 37 young **growing** puppies diets similar in **compn**. to those fed infants demonstrated that sucrose, Dextri-**Maltose**, and corn sirup are equally suitable as types of dietary carbohydrate. No significant differences were observed in rate of **growth** or response of blood sugar levels or serum levels of protein and total fatty acids between groups of animals fed these sugars as the major source of carbohydrate. Cholesterol levels were lowest when sucrose was fed in diets containing corn or hydrogenated coconut oil. **Lactose** was not acceptable as the sole source of carbohydrate for the young puppy. This may be attributed to a deficiency of the enzyme lactase in the intestinal mucosa of the puppy. Rate of **growth** and serum levels of unsatd. fatty acids in these animals differed from those fed sucrose, Dextri-**Maltose**, or corn sirup when the diet was low in linoleic acid. Differences in serum unsatd. fatty acids between puppies fed **lactose** and those fed sucrose, Dextri-**Maltose**, or corn sirup were very slight when corn oil diets were fed. It is concluded that during the period of rapid **growth** dietary fat affects the level and **composition** of serum lipids to a greater extent than does dietary carbohydrate.

L25 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1962:26783 HCAPLUS
DOCUMENT NUMBER: 56:26783
ORIGINAL REFERENCE NO.: 56:5131b-d
TITLE: Certain characteristics of carbohydrate metabolism in **plants** of high altitude
AUTHOR(S): Reinus, R. M.
SOURCE: Izvest. Akad. Nauk Tadzhik. S.S.R., Otdel. Sel'skokhoz. i Biol. Nauk (1959), (No. I), 59-78

DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Studies of physiology and seasonal dynamics of indigenous and introduced **plants** at high altitudes (to 4760 m.) are presented. Some 70 species of wild **plants** investigated were classified into 3 groups: (1) low carbohydrate, .apprx.12%; (2) 12-18%; (3) as high as 40%. In many species soluble forms of carbohydrate predominated, in others starch was stored up to 5%. Metabolic changes induced in these **plants** by external factors, warm and cold temperature, depended on inherent structures of the **plant**, e.g. moisture deficiency caused **increase** of hemi-cellulose in Eurotia ceratoides and Stipa glareosa and sucrose in **legumes**. Lowering temperature caused **increase** of sugars in all **plants** and, in addition, the storage of those sugars characteristic of the species, e.g., monose in Astragalus chadjanensis, **maltose** in Gysophyla capituliflora.

L25 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1960:69040 HCAPLUS
DOCUMENT NUMBER: 54:69040
ORIGINAL REFERENCE NO.: 54:13288d-f
TITLE: Mono- and oligosaccharides of some **legume seed** as well as their behavior on storage and germination
AUTHOR(S): Taufel, K.; Steinbach, K. J.; Vogel, E.
CORPORATE SOURCE: Humboldt-Univ., Berlin
SOURCE: Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung (1960), 112, 31-40
CODEN: ZLUFAR; ISSN: 0044-3026
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB On the basis of qual. and quant. paper chromatographic analyses, healthy raw **seeds** of peas, beans, and soybean contain traces of glucose and fructose, and not too negligible quantities of raffinose, stachyose, and verbascose. During 1-month storage there is practically no change in lower carbohydrate content. With abnormal storage (high temperature and humidity), the amts. of verbascose and stachyose slightly decrease, whereas sucrose and raffinose **increase** and free **galactose** becomes detectible. During germination the oligosaccharides decrease while sucrose significantly **increases** and **galactose** shows an intermediate manifestation. **Maltose** is detectible during the germination of soybeans, but not with peas or beans. The balance relation of mono- and oligosaccharides during storage of germinated **seed** exhibit abnormal changes; with soybeans the **maltose developed** as an intermediary disappears completely; whereas, sucrose, the analog for peas and beans, shows an **increase**. The data are discussed with respect physiol.-chemical observations during storage and germination of the **seeds**.

L25 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1954:66148 HCAPLUS
DOCUMENT NUMBER: 48:66148
ORIGINAL REFERENCE NO.: 48:11735f-h
TITLE: Animal protein factor
INVENTOR(S): Bennett, Ralph E.
PATENT ASSIGNEE(S): Commercial Solvents Corp.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2681881		19540622	US	

AB The production is described of animal protein factor (APF) concentrates by fermenting an aqueous nutrient medium by use of the organism Streptomyces vinaceus. The nutrient medium contains 0.1-4% carbohydrate (e.g. dextrose, sucrose, **maltose**, **lactose**, starch, or dextrin), 1-8% protein (e.g. thin grain slop, corn steep liquor, **cottonseed** meal, cereal grains, or meals from **leguminous plants**), and 1-30 p.p.m. Co. In an example, dried thin grain slop 4.0, dextrose 0.5, (NH4)2SO4 0.2, and CoCl2 0.002% were placed in a tank and enough water added to make 50 gal. The medium was heated for 2 hrs. at 120° and then cooled to 28°, at which temperature it was maintained throughout the fermentation period. The medium was then inoculated with 0.5% by volume of Streptomyces vinaceus. Sterile air was supplied through a ring sparger at the rate of 10 cu. ft. per min. After fermentation for 4 days the solids were recovered by concentrating in an evaporator and then drying the concentrate to obtain 66 lb. of solids containing APF.

L25 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1954:49786 HCAPLUS
DOCUMENT NUMBER: 48:49786
ORIGINAL REFERENCE NO.: 48:8860c-f
TITLE: The proteinases of isolated nodular bacteria of **leguminous plants**. II. Relations between the nutrition of bacteria and enzyme formation, etc.
AUTHOR(S): Oberlander, Hans Erich
CORPORATE SOURCE: Tech. Hochschule, Vienna
SOURCE: Mitt. Versuchssta. Garungsgewerbe (1953), 7, 72-85
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB cf. C.A. 47, 11270c. The connections between the nutrition of Rhizobium **leguminosarum** and its ability of forming proteinase in liquid culture media was investigated. The proteinases show activity maximum at pH 4.3 and 7.0, resp., the enzyme activity being greatest if N is offered in the form of proteins, less if a nitrate-amino acid mixture is used as N source and least in a N-free culture. The maximum of enzyme formation is reached after 1-2 weeks **growth** and it then declines until the 5th week. The pH of the nutritive solution depends upon its protein contents. Monosaccharides are taken up more quickly from the nutritive solution than disaccharides, aldoses more quickly than ketoses, the order of efficiency being glucose, **lactose**, **galactose**, fructose, **maltose**, sucrose. The assimilation of the carbohydrates is quickest in the 1st week. After 5-weeks **growth**, 10-40% of the monosaccharides and 15-55% of the disaccharides are not yet used up. From culture media which contain both mono- and disaccharides, the easier assimilable one is taken up preferably, both saccharides in lesser amts. than if present alone. The time slope of the assimilation rate is different for easily and difficultly assimilable carbohydrates, resp. By permanent aeration the assimilation of carbohydrates is **increased** but not up to their total consumption. The enzyme activity depends upon the kind of carbohydrates present and is poorer with mixts. of carbohydrates; it is not **increased** by constant aeration. 28 references.

L25 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1951:39085 HCAPLUS

DOCUMENT NUMBER: 45:39085
ORIGINAL REFERENCE NO.: 45:6700f-i
TITLE: Root nodules of **leguminous plants**. I. Pigmentation of nodules
AUTHOR(S): Nowotny-Mieczynska, Anna
CORPORATE SOURCE: P.I.N.G.W. Pulawy, Pol.
SOURCE: Polska Akad. Umiejetnosci, Prace Rolniczo-Lesne (1950), No. 50, 35 pp.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Changes in pigmentation of root nodules (I) of peas, lupine, and serradella are observed from their first appearance until their disappearance. Time of appearance of I, their size and pigmentation, as well as the N assimilation of the **plant** vary with the soil. The dry weight of the **plant**, of I, and the amount of N compds. approx. doubles in the period from the appearance of I to the end of the blooming time. During the latter part of this period the pigment of I becomes exclusively red; and as the **growth** rate of the **plant** decreases the red is slowly replaced by green. There is a direct relationship between the concentration of red pigment in I and the N assimilation by the **plant**. Shading of **plants**, removing leaves or pruning changes pigmentation in I and checks further nodulation: for peas Ishade/Ilight = 1:3. Watering of shaded and pruned **plants** with 0.5% **maltose** partially prevents above changes in pigments of I (in lupine), but neither **maltose** nor glucose watering reverses the change once it has occurred.

L25 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1938:47978 HCAPLUS
DOCUMENT NUMBER: 32:47978
ORIGINAL REFERENCE NO.: 32:6684g-i,6685a-b
TITLE: Respiratory enzyme systems in symbiotic nitrogen fixation. I. The "resting cell" technic as a method for study of bacterial metabolism
AUTHOR(S): Wilson, P. W.
SOURCE: Journal of Bacteriology (1938), 35, 601-23
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB "Resting cell" suspensions are prepared by **growing** R. trifolium on "Medium 79" (Root Nodule Bacteria and **Leguminous Plants**, Fred, Baldwin and McCoy, C. A. 27, 4020) plus 0.5% Difco yeast extract and 1.5% agar. A 48-hr. slant is washed off in 10 cc. of Allison's solution (C. A. 28, 5493.9). This is better than using **growing** cells. The relative rate of reduction of methylene blue by the organism in the presence of a given substrate is definitely lower than the rate of oxidation. (Methods of Warburg and of Barcroft, cf. Manometric Methods, C. A. 28, 2381.7). But the rank of the substrates shows good agreement whether mol. O or methylene blue is taken as the H acceptor, except that arabinose and **galactose** are good donators to O but only fair to methylene blue and the reverse is true for formate. No carbohydrate examined was as good a H donator as glucose, with the possible exception of arabinose. Fructose, sucrose, mannose and **maltose** are also good donators to O in the presence of R. trifolii; xylose, **lactose**, cellobiose, rhamnose and raffinose are fair. The polyhydric alcs. are oxidized by O in an unusual manner. The initial rate of respiration, which was low, **increased** with time, while with carbohydrates the rate was constant This suggests the formation of an intermediate, possibly the corresponding aldose. The results were independent of the number of C

atoms in the alc. All these alcs. are active toward O but not toward methylene blue, with the possible exception of sorbitol. Organic acids, especially the 4 C dicarboxylic ones were rapidly utilized. With O as an acceptor, the highest respiration occurring with any substrate was obtained with fumarate and succinate. Other acids varied in their activity as substrates. Forty-three references.

L25 ANSWER 23 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1915:18607 HCAPLUS
DOCUMENT NUMBER: 9:18607
ORIGINAL REFERENCE NO.: 9:3081i,3082a-c
TITLE: A bacterial test for **plant** food accessories (auximones)
AUTHOR(S): Bottomley, W. B.
SOURCE: Proc. Roy. Soc. London (B) (1915), 89, 102
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB B. gives the name auximones to those organic substances necessary in small amts. for the **growth** of **plants** and in some respects analogous to Suzuki's "oryzanins" or Funk's "vitamines." Hitherto the only means of demonstrating the presence of auximones was by their action on the higher **plants**. B. gives a bacteriological test in which liquid cultures of nitrifying organisms are employed, the culture used in the test being a subculture from 10 g. garden soil, 100 cc. tap water, 0.1 g. (NH4)2SO4, 0.1 g. K2HPO4 and 0.2 g. MgCO3. When the auximones (obtained from bacterized **peat** by extraction with H2O and precipitation with phosphotungstic acid) are added and the culture incubated at 26°, a scum forms in 24 to 36 hrs. and no nitrates are observed in the solution, while without the auximone no scum forms and nitrification proceeds normally. No scum was observed after 4 days with equivalent solns. of sucrose, **maltose**, asparagine, peptone, leucine, tyrosine and hordein. The test is specific for auximones. By the above method their presence is demonstrated in rotted manure, root nodules of **leguminous plants**, etc. The organisms which form the scum require no organic C for their **growth**, in this respect resembling N, S and Fe bacteria. The **plant** auximones differ from the vitamines in that they are not destroyed by heating.

L25 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1911:6350 HCAPLUS
DOCUMENT NUMBER: 5:6350
ORIGINAL REFERENCE NO.: 5:1153g-h
TITLE: Making a fertilizer for **nonleguminous plants**.
INVENTOR(S): Bottomley, William B.
PATENT ASSIGNEE(S): UK
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 982569		19110124	US	

AB Making a fertilizer for non **leguminous plants** by **growing** Pseudomonas and Azotobacter together in a medium containing **maltose**, mannitol, monobasic K phosphate and MgSO4, the resultant culture being mixed with sterilized fine sifted soil or **peat**.

L25 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1909:11810 HCAPLUS
DOCUMENT NUMBER: 3:11810
ORIGINAL REFERENCE NO.: 3:2192f-i,2193a-b
TITLE: The Assimilation of Atmospheric Nitrogen by Soil Microorganisms
AUTHOR(S): Stranak, Fr.
CORPORATE SOURCE: Prague Sugar Expt. Sta.
SOURCE: Zeitschrift fuer Zuckerindustrie in Boehmen (1909), 33, 599-614
CODEN: ZZIBAJ; ISSN: 0373-0409
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB The literature relating to the subject is reviewed with special reference to the work of Kuhn, Berthelot, Caron, Winogradsky, Beijerinck, Stoklasa and others. The author describes his own expts. with Azotobacter chroococcum. Methods for the isolation of this organism are described in full. An abundant supply of carbohydrate is necessary, as has been shown by other investigators, to secure the best results of N assimilation. Using the following sugars the assimilation of atmospheric N in mgs. per 1. of culture soluble was as follows: arabinose 180.2, fructose 155.4, glucose 152.3, xylose 143.0, **galactose** 141.5, saccharose 125.1, **maltose** 86.0, **lactose** 81.6, rhamnose 49.8. The fact that the pentose sugar arabinose gave the best results would indicate that the pentosans of the soil are of greatest importance in the assimilation of N by soil bacteria. The average consumption of carbohydrates per 1 g. N assimilated in the case of glucose was 165 g. Tables are given showing the changes in comp. of culture media under aerobic and anaerobic conditions. In presence of nitrates azotobacter supplies its needs from this source and does not assimilate atmospheric N. The organism reduces nitrate N to NH3. Practical soil tests show the following **increase** for soils inoculated with azotobacter; fodder beets 10% more roots 35% more leaves; oats 13% more grain, 16% more straw; potatoes 31% more tubers. The following method of soil inoculation was found to be best: 5 kg. soil containing 250 g. glucose are inoculated with 500 cc. of a glucose culture of azotobacter. The soil is incubated 3 months at 24°. At the end of this time the organism has become adapted to the chemical and physical conditions of natural soil. Such inoculated soil gives far better results than the glucose culture. In one experiment a pot inoculated with pure culture of azotobacter gave 12.64 g. **seed** and 19.90 g. straw; a similar pot treated with inoculated soil gave 29.79 g. **seed** and 44.84 g. straw.

L25 ANSWER 26 OF 26 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1909:8943 HCAPLUS
DOCUMENT NUMBER: 3:8943
ORIGINAL REFERENCE NO.: 3:1663h-i,1664a-b
TITLE: **Legume** Bacteria
AUTHOR(S): Edwards, S. F.; Barlow, B.
CORPORATE SOURCE: Ont. Agr. College
SOURCE: Bull. (1909) 169
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB The work of this subject has been continued and Ps. radicicola has been found present in the following **plants**: Medicago lupulina, Melilotus officinalis, Trifolium hybridum, Trifolium procumbens, Caragana furtescens, Robinia pseudacacia, Robinia viscosa, Vicia faba, Vicia americana, Lathyrus sylvestris, Lathyrus odoratus, Phaseolus multiflorus. It was found that for general studies the best results were obtained with

media in the proportion, H2O 100, ash 0.4-1%, **maltose** 0.4-1%, agar 0.4-1.5%. Using other substances in the place of **maltose**, maximum results were obtained in 17 days with dextrose, mannite, and amygdalin; **growth** was scant in asparagine and inulin and nil in levulose. In liquid media **maltose** gave the most abundant **growth**, levulose none at all. It appears that on favorable media Ps. radicicola is long-lived, at least 1-31/2 years. The organisms dried at room temperature on beans, peas, and red clover **seed** were nearly all dead in 5-6 to 13 days except that on beans, dried on glass and on paper at room temperature, all were dead in 24 hrs., while in the dried nodule a few organisms withstand dessication for a long time.

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=> d que stat l35
L6            1 SEA FILE=REGISTRY ABB=ON  "RHIZOBIUM JAPONICUM"/CN
L7            2 SEA FILE=REGISTRY ABB=ON  MALTOSE/CN
L8            1 SEA FILE=REGISTRY ABB=ON  POTASSIUM SORBATE/CN
L9            1 SEA FILE=REGISTRY ABB=ON  LACTOSE/CN
L10       29430 SEA FILE=HCAPLUS ABB=ON  ?RHIZOBIUM?(W)?JAPONICUM?(3A)?BACTER?
                OR L6 OR L7 OR L8 OR ?MALTOSE? OR (?POTASSIUM? OR K)(W)?SORBATE
                ?
L15         163 SEA FILE=HCAPLUS ABB=ON  L10 AND ?LEGUM?
L16         115 SEA FILE=HCAPLUS ABB=ON  L15 AND (?MALTOSE? OR L7)
L17           3 SEA FILE=HCAPLUS ABB=ON  L15 AND (?POTASSIUM? OR K)(W)?SORBATE?

L18         118 SEA FILE=HCAPLUS ABB=ON  L16 OR L17
L19          57 SEA FILE=HCAPLUS ABB=ON  L18 AND (?PLANT? OR ?SEED?)
L20          26 SEA FILE=HCAPLUS ABB=ON  L19 AND (?GROW? OR ?INCREAS? OR
                ?THRIVE? OR ?DEVELOP?)
L21           3 SEA FILE=HCAPLUS ABB=ON  L20 AND ?PEAT?
L22          14 SEA FILE=HCAPLUS ABB=ON  L20 AND (?LACTOSE? OR L9)
L23          26 SEA FILE=HCAPLUS ABB=ON  L20 OR L21 OR L22
L24           4 SEA FILE=HCAPLUS ABB=ON  L23 AND ?COMPOSITION?
L25          26 SEA FILE=HCAPLUS ABB=ON  L23 OR L24
L26         209 SEA L25
L30         176 DUP REMOV L26 (33 DUPLICATES REMOVED)
L33          12 SEA L30 AND RHIZOBIUM?
L34           2 SEA L33 AND PLANT?(3A) GROWTH?
L35          12 SEA L33 OR L34

=> d ibib abs l35 1-12

L35  ANSWER 1 OF 12  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
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     (2004) on STN
ACCESSION NUMBER:         2000:22458  AGRICOLA
DOCUMENT NUMBER:          IND22026825
TITLE:                    A novel Sinorhizobium meliloti operon encodes and
                          alpha-glucosidase and a periplasmic-binding-protein-
                          dependent transport system for alpha-glucosides.
AUTHOR(S):                Willis, L.B.; Walker, G.C.
CORPORATE SOURCE:         Massachusetts Institute of Technology, Cambridge, MA.
AVAILABILITY:             DNAL (448.3 J82)
SOURCE:                   Journal of bacteriology, July 1999. Vol. 181, No. 14.
                          p. 4176-4184
                          Publisher: Washington, D.C. : American Society for
                          Microbiology.
                          CODEN: JOBAAY; ISSN: 0021-9193
NOTE:                     Includes references
PUB. COUNTRY:             District of Columbia; United States
DOCUMENT TYPE:            Article
FILE SEGMENT:             U.S. Imprints not USDA, Experiment or Extension
LANGUAGE:                 English
AB   The most abundant carbon source transported into legume root
     nodules is photosynthetically produced sucrose, yet the importance of its
     metabolism by rhizobia in planta is not yet known. To identify
     genes involved in sucrose uptake and hydrolysis, we screened a
     Sinorhizobium meliloti genomic library and discovered a segment of S.
     meliloti DNA which allows Ralstonia eutropha to grow on the
     alpha-glucosides sucrose, maltose, and trehalose. Tn5
     mutagenesis localized the required genes to a 6.8-kb region containing
     five open reading frames which were named agl, for alpha-glucoside
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utilization. Four of these (aglE, aglF, aglG, and aglK) appear to encode a periplasmic-binding-protein-dependent sugar transport system, and one (aglA) appears to encode an alpha-glucosidase with homology to family 13 of glycosyl hydrolases. Cosmid-borne agl genes permit uptake of radio-labeled sucrose into R. eutropha cells. Analysis of the properties of agl mutants suggests that S. meliloti possesses at least one additional alpha-glucosidase as well as a lower-affinity transport system for alpha-glucosides. It is possible that the Fix+ phenotype of agl mutants on alfalfa is due to these additional functions. Loci found by DNA sequencing to be adjacent to aglEFGAK include a probable regulatory gene (aglR), zwf and edd, which encode the first two enzymes of the Entner-Doudoroff pathway, pgl, which shows homology to a gene encoding a putative phosphogluconolactonase, and a novel **Rhizobium**-specific repeat element.

L35 ANSWER 2 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 2004:75344 BIOSIS
DOCUMENT NUMBER: PREV200400076910
TITLE: Symbiotic properties of hypermotile mutants of Bradyrhizobium sp. (Vigna aconitifolia).
AUTHOR(S): Chakraborty, Manigopa; Khan, Hanif; Ramkrishna, K. [Reprint Author]
CORPORATE SOURCE: Departmrnt of Plant Breeding and Genetics, Shri Karna Narendra College of Agriculture, Rajasthan Agricultural University, Jobner, RAJ, 303 329, India
krkrishna4@rediff.com
SOURCE: Indian Journal of Microbiology, (June 2003) Vol. 43, No. 2, pp. 101-105. print.
ISSN: 0046-8991 (ISSN print).
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 4 Feb 2004
Last Updated on STN: 4 Feb 2004

AB An attempt was made to isolate hypermotile mutants of cowpea **Rhizobium** MR125s2-smr8 through UV mutagenesis. A "capillary movement" step was involved to trap hypermotile individuals from the mutagenised populations. In one case entrapped cells formed larger swarm as compared to the parent. This swarm was subjected to 3 cycles of peripheral cell enrichment and from that 50 individual isolates were tested both for swarm size and nodulation. Majority of the isolates (74%) showed large stable swarm when compared to the parent. The nodulation was, however, considerably affected. Twenty six isolates lost nodulation ability. The mutants, whose swarm size was larger and produced pinkinsh nodules, were further characterized. On culture medium the parent and mutants preferred KNO3 as sole N source over yeast extract and did not **grow** on media containg glucose or **maltose**. On the basis of N content in **plant**, the mutants varied significantly from each other. When coinoculated with the parent, mutant had generally higher nodule occupancy.

L35 ANSWER 3 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1999:344191 BIOSIS
DOCUMENT NUMBER: PREV199900344191
TITLE: Purification and characterization of an alpha-glucosidase from **Rhizobium** sp. (Robinia pseudoacacia L.) strain USDA 4280.
AUTHOR(S): Berthelot, Karine; Delmotte, Francis M. [Reprint author]
CORPORATE SOURCE: Laboratoire de Biologie des Ligneux, Faculte des Sciences, rue de Chartres, 45067, Orleans cedex, 2, France
SOURCE: Applied and Environmental Microbiology, (July, 1999) Vol.

65, No. 7, pp. 2907-2911. print.
CODEN: AEMIDF. ISSN: 0099-2240.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 24 Aug 1999
Last Updated on STN: 24 Aug 1999

AB A novel alpha-glucosidase with an apparent subunit mass of 59 +- 0.5 kDa was purified from protein extracts of **Rhizobium** sp. strain USDA 4280, a nodulating strain of black locust (Robinia pseudoacacia L), and characterized. After purification to homogeneity (475-fold; yield, 18%) by ammonium sulfate precipitation, cation-exchange chromatography, hydrophobic chromatography, dye chromatography, and gel filtration, this enzyme had a pI of 4.75 +- 0.05. The enzyme activity was optimal at pH 6.0 to 6.5 and 35degreeC. The activity **increased** in the presence of NH4+ and K+ ions but was inhibited by Cu2+, Ag+, Hg+, and Fe2+ ions and by various phenyl, phenol, and flavonoid derivatives. Native enzyme activity was revealed by native gel electrophoresis and isoelectrofocusing-polyacrylamide gel electrophoresis with fluorescence detection in which 4-methylumbel-liferyl alpha-glucoside was the fluorogenic substrate. The enzyme was more active with alpha-glucosides substituted with aromatic aglyconesthan with oligosaccharides. This alpha-glucosidase exhibited Michaelis-Menten kinetics with 4-methylumbelliferyl alpha-D-glucopyranoside (Km, 0.141 muM; Vmax, 6.79 mumol min-1 mg-1) and with p-nitrophenyl alpha-D-glucopyranoside (Km, 0.037 muM; Vmax, 2.92 mumol min-1 mg-1). **Maltose**, trehalose, and sucrose were also hydrolyzed by this enzyme.

L35 ANSWER 4 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1996:323249 BIOSIS
DOCUMENT NUMBER: PREV199699045605
TITLE: Effect of nutritional and environmental conditions on siderophore production by cowpea **Rhizobium** GN1 (peanut isolate).
AUTHOR(S): Jadhav, R. S. And Anjana Desai [Reprint author]
CORPORATE SOURCE: Dep. Microbiol. Biotechnol. Cent., Fac. Sci., M. S. University of Baroda, Baroda 390 002, India
SOURCE: Indian Journal of Experimental Biology, (1996) Vol. 34, No. 5, pp. 436-439.
CODEN: IJEBA6. ISSN: 0019-5189.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 11 Jul 1996
Last Updated on STN: 11 Jul 1996

AB Though cowpea **Rhizobium** GN1 (peanut isolate) produced siderophore only under iron-starved conditions, other nutritional and environmental conditions/factors also affected siderophore production and iron assimilation by this organism. Maximum siderophore production was obtained with **maltose** and urea as carbon and nitrogen source respectively. With citrate as a sole source of carbon there was complete inhibition/repression of siderophore production without any effect on the **growth**. Possible involvement of citrate in iron transport was confirmed by 55Fe-citrate uptake studies. The factors like phosphate level, pH of the **growth** medium, flask volume as to medium volume ratio (aeration) and temperature affected siderophore production. Amongst different metal ions magnesium was found to be essential for siderophore production. Cobalt and chromium decreased siderophore production resulting in decreased **growth** of the organism under iron-limited conditions. Zinc and copper inhibited activity of ferri-siderophore reductase (iron reductase), an enzyme required for release of iron from ferri-siderophore complex.

L35 ANSWER 5 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1993:324409 BIOSIS
DOCUMENT NUMBER: PREV199396032759
TITLE: Studies on the role of Hup system in symbiotic nitrogen fixation in Cajanus cajan L.
AUTHOR(S): Gosal, S. K.; Sekhon, G. K.; Gupta, R. P.; Pandher, M. S.
CORPORATE SOURCE: Dep. Microbiol., Punjab Agric. Univ., Ludhiana-141 004, India
SOURCE: Acta Microbiologica Polonica, Vol. 41, No. 3-4, pp. 151-156. 1992 (1993).
ISSN: 0137-1320.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 12 Jul 1993
Last Updated on STN: 13 Jul 1993

AB Twenty nine **Rhizobium** strains were isolated from field **grown plants** of black gram, green gram, clover, lentil, cowpea, pigeonpea and groundnut. Six cowpea group rhizobia possessed hydrogenase activity was studied by TTC and GLC methods. The expression of uptake hydrogenase activity (Hup) varied from 40.3 to 260.0 nmol of H-2 taken h-1 mg-1 protein amongst various species of rhizobia. The highest uptake hydrogenase activity (172.8 nmol of H-2 taken h-1 mg-11 protein) in case of pigeon pea rhizobia was exhibited by **Rhizobium** sp. (P-132) followed by **Rhizobium** sp. (GK-16). Hup- mutant from each Hup+ strain was obtained and compared with respective Hup+ strain for various symbiotic parameters of pigeonpea (Cajanus cajan L.) cv. Al-15. Positive role of Hup system responsible in nitrogen fixation and **plant** was shown by significant **increase** in nodulation, leghaemoglobin content, shoot dry weight, nitrogen content, hydrogenase and nitrogenase activities on pigeonpea with Hup+ parent.

L35 ANSWER 6 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1990:265805 BIOSIS
DOCUMENT NUMBER: PREV199090007891; BA90:7891
TITLE: STIMULATION OF ALPHA GLUCOSIDASES FROM FAST-**GROWING** RHIZOBIA AND AGROBACTERIUM-TUMEFACIENS BY POTASSIUM ION AMMONIUM ION AND RUBIDIUM ION.
AUTHOR(S): HOELZLE I [Reprint author]; STREETER J G
CORPORATE SOURCE: DEP AGRONOMY, OHIO STATE UNIV, WOOSTER, OHIO 44691, USA
SOURCE: Canadian Journal of Microbiology, (1990) Vol. 36, No. 3, pp. 223-227.
CODEN: CJMIAZ. ISSN: 0008-4166.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 5 Jun 1990
Last Updated on STN: 6 Jun 1990

AB Extracts from cultured fast-**growing** rhizobia and Agrobacterium tumefaciens contain enzymes for hydrolysis of the α-glucosides **maltose**, sucrose, and α,α-trehalose. The hydrolysis of all three sugars was stimulated by the presence of K+, Rb+, or NH4+. This stimulation varied from less than 2-fold to more than 12-fold, depending on the bacterial species, culture conditions, and experimental conditions, such as type of enzyme, buffer, and ion concentration. Eight other ions tested, including several divalent cations, did not have any stimulatory effect. Other sources of enzyme (Escherichia coli, Saccharomyces cerevisiae, Oryza sativa, porcine kidney, and Medicago sativa and Glycine max nodule cytosol) contained α-glucosidases that differed in both substrate specificity and pH optima and were not affected

by K+, Rb+ or NH4+ ions. Bacteroids from G. max and Phaseolus vulgaris nodules did not have detectable α-glucosidase activity. **Growth** of **Rhizobium leguminosarum** biovar phaseoli USDA 2667 with one of the α-glucosides as carbon source **increased** Vm and substrate affinity for all three disaccharidase activities. The pH optimum for all three enzymes activities in R. **leguminosarum** bv. phaseoli USDA 2667 was 6.6. Stimulation by specific monovalent cations appears to be novel property of α-glucosidases in the bacterial family Rhizobiaceae.

L35 ANSWER 7 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1989:387970 BIOSIS
DOCUMENT NUMBER: PREV198988068560; BA88:68560
TITLE: PRODUCTION OF IAA BY A **RHIZOBIUM**-SP FROM MIMOSA-PUDICA.
AUTHOR(S): ROY M [Reprint author]; BASU P S
CORPORATE SOURCE: DEP BOTANY, UNIV BURDWAN, GOLAPBAG, BURDWAN 713 104, WEST BENGAL, INDIA
SOURCE: Folia Microbiologica, (1989) Vol. 34, No. 2, pp. 120-126. CODEN: FOMIAZ. ISSN: 0015-5632.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 17 Aug 1989
Last Updated on STN: 26 Aug 1989

AB A **Rhizobium** species isolated from the root nodules of the sensitive **plant**, Mimosa pudica, produced 60 mg/L of 3-indoleacetic acid (IAA) from L-tryptophan in culture. The production of IAA started simultaneously with the **growth** and had no different **growth** or production phase. The stationary phase of **growth** was reached after 55 h, but the production of IAA **increased** gradually up to 80 h, and then remained constant. The IAA production could be promoted in the culture medium up to 365% by supplementing the medium with **maltose**, CuSO4 and Triton x-100.

L35 ANSWER 8 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1986:97589 BIOSIS
DOCUMENT NUMBER: PREV198681008005; BA81:8005
TITLE: SUGARS IN LUPINE ROOT NODULES IN THE COURSE OF **PLANT DEVELOPMENT**.
AUTHOR(S): ROMANOV V I [Reprint author]; CHERMENSKAYA I E; FEDULOVA N G; KRETOVICH V L
CORPORATE SOURCE: AN BAKH INST BIOCHEM, ACAD SCI USSR, MOSCOW, USSR
SOURCE: Fiziologiya Rastenii (Moscow), (1985) Vol. 32, No. 2, pp. 375-380. CODEN: FZRSAV. ISSN: 0015-3303.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: RUSSIAN
ENTRY DATE: Entered STN: 25 Apr 1986
Last Updated on STN: 25 Apr 1986

AB The **composition** of ethanol-soluble sugars in nodule bacteroids [**Rhizobium** lupini] and cytosol of yellow lupin **grown** in nitrogen-free medium was similar at all **developmental** stages. The main components of the sugar fraction were sucrose (35-40% of the total free sugars in the cytosol and 45-55% in bacteroids), glucose and fructose. **Maltose**, ribose, arabinose, mannose, xylose and rhamnose were in minor amounts. The sucrose content in nodule cytosol, when calculated per g fresh weight, correlated positively with nitrogen fixation values during **plant growth**, whereas bacteroid

sucrose was changing negligibly. The content of glucose and fructose was **increasing**, especially in bacteroides, during a decline in nitrogen fixation in the course of **plant** senescence. The content of arabinose in bacteroids correlated positively with the rate of nitrogen fixation. It follows from the results that: 1. sucrose is the main sugar entering bacteroids in lupin root nodules actively fixing nitrogen, 2. arabinose may be of importance in the process of symbiotic nitrogen fixation, and 3. the decrease in nitrogen-fixing activity during **seed** ripening and **plant** senescence is not associated with a carbon substrate deficiency in bacteroids.

L35 ANSWER 9 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1981:163945 BIOSIS
DOCUMENT NUMBER: PREV198171033937; BA71:33937
TITLE: CARBOHYDRATES IN SOYBEAN GLYCINE-MAX CULTIVAR BEESON NODULES 2. DISTRIBUTION OF COMPOUNDS IN **SEEDLINGS** DURING THE ONSET ON NITROGEN FIXATION.
AUTHOR(S): STREETER J G [Reprint author]
CORPORATE SOURCE: DEP AGRON, OHIO AGRIC RES DEV CENT, WOOSTER, OHIO 44691, USA
SOURCE: Plant Physiology (Rockville), (1980) Vol. 66, No. 3, pp. 471-476.
CODEN: PLPHAY. ISSN: 0032-0889.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB During the first few days of N2 fixation activity by soybean (Glycine max (L.) Merr) root nodules [inoculated with a commercial preparation of **Rhizobium** japonicum], D-chiro-inositol, myo-inositol, sucrose, α,α-trehalose, and **maltose** accumulate rapidly and reach concentrations severalfold greater than concentrations in other **plant** organs. Concentrations of D-pinitol in nodules (≥ 1.0 mg/g) were similar to concentrations in leaf blades. The concentration of fructose in nodules was lower than concentrations in other **plant** organs. Comparison of nonnodulated roots, nodulated roots (after removal of nodules), and nodules indicated that nodules may compete successfully with roots for carbohydrates, especially the disaccharides sucrose, α,α-trehalose and **maltose**. Based on the isolation of protoplasts and bacteroids, it was tentatively concluded that the highest concentrations of cyclitols in soybean nodules are located in the infected region and that inside infected cells, the highest concentrations of D-pinitol and myo-inositol are outside of bacteroids. Evidence for the identification of D-chiro-inositol and **maltose** in soybean nodules is presented.

L35 ANSWER 10 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1979:186670 BIOSIS
DOCUMENT NUMBER: PREV197967066670; BA67:66670
TITLE: PHOSPHO GLUCOSE ISOMERASE MUTANT OF **RHIZOBIUM** -MELILOTI.
AUTHOR(S): ARIAS A [Reprint author]; CERVENANSKY C; GARDIOL A; MARTIN-DRETS G
CORPORATE SOURCE: DIV BIOCHEM, INST INVEST BIOL CLEMENTE ESTABLE, MONTEVIDEO, URUG
SOURCE: Journal of Bacteriology, (1979) Vol. 137, No. 1, pp. 409-414.
CODEN: JOBAAY. ISSN: 0021-9193.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH

AB A mutant strain of complex phenotype was selected in R. meliloti after nitrosoguanidine mutagenesis. It failed to **grow** on mannitol, sorbitol, fructose, mannose, ribose, arabitol or xylose, but grew on glucose, **maltose**, gluconate, L-arabinose and many other carbohydrates. Assay showed the enzyme lesion to be in phosphoglucose isomerase (pgi), and revertants, which were of normal **growth** phenotype, contained the enzyme again. Nonpermissive substrates such as fructose and xylose prevented **growth** on permissive ones such as L-arabinose, and in such situations there was high accumulation of fructose 6-phosphate. The mutant strain had about 20% as much exopolysaccharide as the parent. N2 fixation by whole [lucerne] **plants** was low and delayed when the mutant strain was the inoculant.

L35 ANSWER 11 OF 12 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1977:231533 BIOSIS
DOCUMENT NUMBER: PREV197764053897; BA64:53897
TITLE: SOME FACTORS AFFECTING THE SURVIVAL OF ROOT NODULE BACTERIA ON DESICCATION.
AUTHOR(S): BUSHBY H V A; MARSHALL K C
SOURCE: Soil Biology and Biochemistry, (1977) Vol. 9, No. 3, pp. 143-147.
CODEN: SBIOAH. ISSN: 0038-0717.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: Unavailable
AB The average number of survivors of fast-**growing** medic rhizobia (3 strains), fast-**growing** **Rhizobium** **leguminosarum** types (6 strains) and slow-**growing** species (9 strains) following desiccation of sandy soil inoculated with 106 bacteria/g soil was 727, 795 and 15,682 bacteria/g soil, respectively. Survival in descidesiccated sandy soil was not influenced by the degree of extracellular polysaccharide production in strains of R. trifolii, nor by **growth** of R. meliloti and slow-**growing** species in media of low water activity before desiccation in sandy soil. A progressive **increase** in numbers of fast-**growing** bacteria surviving desiccation was observed in sandy soil amended with **increasing** concentrations of powdered montmorillonite, but not with montmorillonite added as a suspension to the soil. The clay had either a detrimental effect or no effect on the survival of the slow-**growing** rhizobia. **Maltose**, sucrose and polyvinylpyrrolidone provided a greater degree of protection to both fast- and slow-**growing** rhizobia than was obtained with montmorillonite. The effect of polyethylene glycol 6000 was similar to the effect of montmorillonite, as the polymer protected only the fast-**growing** rhizobia and not the slow-**growing** species.

L35 ANSWER 12 OF 12 CABA COPYRIGHT 2004 CABI on STN
ACCESSION NUMBER: 2003:27975 CABA
DOCUMENT NUMBER: 20023195759
TITLE: Characterization of **Rhizobium** of red sanders (Pterocarpus santalinus L.), an endemic tropical tree **legume**
AUTHOR: Rajasekhar, A.; Babu, G. P.; Reddy, T. K. K.
CORPORATE SOURCE: Department of Botany, S.V. University, Tirupati - 517 502, India.
SOURCE: Legume Research, (2002) Vol. 25, No. 3, pp. 154-159. 24 ref.
Publisher: Agricultural Research Communication Centre. Karnal

ISSN: 0250-5371
PUB. COUNTRY: India
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 20030214
Last Updated on STN: 20030214

AB Rhizobial isolates of red sanders, Pterocarpus santalinus were fast **growers** and acid producers. The **growth** characteristics were determined on different media and they produced effective nodules on P. santalinus. Isolates showed good **growth** on different carbon sources including mono, di and polysaccharides, but moderate **growth** on sucrose, **maltose** and least on citrate. The isolates grew well with glutamic acid, aspergine, yeast extract and potassium nitrate as a source of nitrogen, but glycine was least preferred. Isolates grew well at a pH range of 5.0 to 8.0 but not below 4.0 and above 9.0 and they showed good **growth** at 0.1, 0.5 and 1.0 per cent of NaCl in the medium. All the rhizobial isolates of red sanders nodulated Vigna radiata, Dalbergia sissoo and produced ineffective nodules on Leucaena leucocephala. The preliminary identification of the rhizobia of red sanders showed it to be similar to **Rhizobium** phaseoli. Cross infectivity of **Rhizobium** tested on P. santalinus coincide exactly with that of DAC-ELISA results.